GEORGIA INSTITUTE OF TECHNOLOGY   OFFICE OF CONTRACT ADMINISTRATION

PROJECT ADMINISTRATION DATA SHEET

[x] ORIGINAL   [ ] REVISION NO. ______

Project No. A-3920   GTRI~~XXX~~   DATE 8 / 15 / 84

Project Director: Thomas S. Taylor   ~~School~~/Lab ECSL

Sponsor: Thermo Materials Corporation

Type Agreement: P. O. No. 0-1479

Award Period: From 8/2/84 To 10/2/84 (Performance) 10/2/84 (Reports)

Sponsor Amount:	This Change	Total to Date
Estimated:	$ 1,800	$ 1,800
Funded:	$ 1,800	$ 1,800

Cost Sharing Amount: $ None   Cost Sharing No: N/A

Title: Dielectic Constant Measurements for Fused Silica Materials

ADMINISTRATIVE DATA   OCA Contact Brian J. Lindberg x-4820

1) Sponsor Technical Contact:

Mr. Don Kenagy
Thermo Materials Corporation
3449 Church Street
Scottdale, Georgia 30079
(404) 292-4242

2) Sponsor Admin/Contractual Matters:

Mr. Don Kenagy
Thermo Materials Corporation
3449 Church Street
Scottdale, Georgia 30079
(404) 292-4242

Defense Priority Rating: N/A   Military Security Classification: N/A
(or) Company/Industrial Proprietary: N/A

RESTRICTIONS

See Attached N/A Supplemental Information Sheet for Additional Requirements.

Travel: Foreign travel must have prior approval — Contact OCA in each case. Domestic travel requires sponsor approval where total will exceed greater of $500 or 125% of approved proposal budget category.

Equipment: Title vests with None proposed or anticipated.

COMMENTS:

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COPIES TO: Sponsor's I.D. No. 01.269.000.85.001

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FORM OCA 4:383

GEORGIA INSTITUTE OF TECHNOLOGY OFFICE OF CONTRACT ADMINISTRATION

SPONSORED PROJECT TERMINATION/CLOSEOUT SHEET

Date 10/23/84

Project No. A-3920 ~~School~~/Lab ECSL

Includes Subproject No.(s)

Project Director(s) Thomas S. Taylor GTRC ~~XXXXX~~ / ~~XXX~~

Sponsor Thermo Materials Corp.

Title Dielectic Constant Measurements For Fused Silica Materials

Effective Completion Date: 10/2/84 (Performance) 10/2/84 (Reports)

Grant/Contract Closeout Actions Remaining:

- [ ] None
- [x] Final Invoice or Final Fiscal Report
- [ ] Closing Documents
- [ ] Final Report of Inventions
- [ ] Govt. Property Inventory & Related Certificate
- [ ] Classified Material Certificate
- [ ] Other

Continues Project No. Continued by Project No.

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Georgia Institute of Technology
ENGINEERING EXPERIMENT STATION
Atlanta, Georgia 30332

15 September 1984

Mr. Don Kenagy
Thermo Materials Corporation
3449 Church Street
Scottdale, Georgia 30079

Dear Mr. Kenagy:

We are pleased to present the data from our dielectric property measurements of six different fused silica materials. The measurement technique that was used was a shorted circular waveguide technique using a Hewlett-Packard 8510 automated network analyzer. After system calibration, the measurement technique was verified by measuring a standard fused quartz sample. This data is also included in the dielectric properties table.

The fused silica samples were not homogeneous as evidenced by the air pockets visible on the front and back surface. This can produce a small error in determining the dielectric properties from the measured reflection coefficient since the computational method expects a homogeneous material. However, these errors are believed to be very small for these materials. The samples fit very snuggly and so the error attributed to the air gap around the sample is also considered to be very small. The 0.5 and 0.75 inch thick samples yielded much better loss tangent values, and so the loss tangent values obtained with the 0.25 inch thick samples were discarded.

Sincerelv.

Thomas S. Taylor
Research Scientist II

TST:bg

TABLE 1

DIELECTRIC PROPERTIES OF FUSED SILICA

Material Code	Dielectric Constant	Loss Tangent
B	3.17 ± 0.02	0.0028 ± 0.002
BI	3.18 ± 0.02	0.0035 ± 0.002
H	3.20 ± 0.02	0.0045 ± 0.002
HI	3.23 ± 0.02	0.0045 ± 0.002
I	3.25 ± 0.02	0.0045 ± 0.002
X	3.21 ± 0.02	0.0045 ± 0.002
Fused Quartz	3.825 ± .001	<.001